

REMARKS

The Office Action in the above-identified application has been carefully considered and this amendment has been presented to place this application in condition for allowance. Accordingly, reexamination and reconsideration of this application are respectfully requested.

Claims 1–9 and 10–19 are in the present application. It is submitted that these claims are patentably distinct over the prior art cited by the Examiner, and that these claims are in full compliance with the requirements of 35 U.S.C. § 112. No changes have been made to the claims.

Applicant acknowledges with appreciation the indication by the Examiner that claims 2-6 and 12-16 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, Applicant has decided not to amend these claims at this time.

Claims 1, 8, 9, 11, 18, and 19 were rejected under 35 U.S.C. 102(e) as being anticipated by Shibuya et al. (U.S. Patent 6,490,010). Also, claims 7 and 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Shibuya. However, for at least the following reasons, Applicant respectfully disagrees with the Examiner's interpretation of Shibuya and traverses these rejections.

The present invention “detect[s] a robust estimate of the phase error for the received digital input signal; generat[es] and output[s] a robust phase error signal representative of said robust phase error; and derive[es] a frequency sensitive phase error signal from the robust phase

error signal, said frequency sensitive phase error signal being representative of the sign of the frequency error with respect to the received digital input signal.” (Claim 11; Claim 1 contains similar limitations)

The Examiner asserts that Shibuya’s units 60-65 are suitable for generating and outputting a phase error signal and for deriving a frequency sensitive phase error signal, wherein the frequency sensitive phase error signal is representative of the sign of the frequency error with respect to a received digital input signal. The Examiner makes particular reference to unit 61, an autocorrelation computing circuit. However, Shibuya discloses that the autocorrelation function produces “an absolute value of frequency difference ... but the polarity thereof cannot be determined.” (Column 22, lines 60-62; emphasis added) In view of this statement, Shibuya must be considered as teaching away from the present invention in respect to the recited “frequency sensitive phase error signal being representative of the sign of the frequency error” limitation.

The Examiner further asserts that Shibuya’s phase rotation circuits 57 and 58 are suitable for detecting and generating a phase difference signal to the received digital input signal. However, at Column 22, Lines 23-29, Shibuya states the phase rotation circuit 57 is for rotating the phases of the digitized I baseband signal and Q baseband signal output from the coarse control AFC block. Phase rotation circuit 58 provides a frequency offset to the rotated I baseband signal and Q baseband signal. Thus, while circuits 57 and 58 are suitable for rotating a signal input thereto, there is no teaching or suggestion that these features of Shibuya are suitable for either detecting or generating a phase difference signal as in the present invention.

Accordingly, it follows that Shibuya can neither anticipate the subject matter of the claims—in particular the subject matter of independent claims 1 and 11—nor render it obvious.

Furthermore, as regards the overall teaching of the present invention vis-à-vis Shibuya, Applicant notes that Shibuya relies on a training sequence employing BPSK modulation. The coarse control block 4 shown in Figure 2 requires this training sequence. Further, Shibuya's fine control AFC circuit 55 relies on a previous block for coarse control AFC. By contrast, the present invention works for QAM modulation wherein phase error detection is more difficult than for BPSK modulation and without a training sequence. In addition, the present invention employs neither counting nor autocorrelation functions.

Therefore, for at least these reasons, Shibuya fails to anticipate or obviate the present invention and the rejected to the claims should be withdrawn.

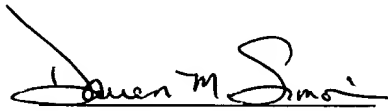
In view of the foregoing amendment and remarks, it is respectfully submitted that the application as now presented is in condition for allowance. Early and favorable reconsideration of the application are respectfully requested.

No additional fees are deemed to be required for the filing of this amendment, but if such are, the Examiner is hereby authorized to charge any insufficient fees or credit any overpayment associated with the above-identified application to Deposit Account No. 50-0320.

If any issues remain, or if the Examiner has any further suggestions, he/she is invited to call the undersigned at the telephone number provided below. The Examiner's consideration of this matter is gratefully acknowledged.

Respectfully submitted,
FROMMER LAWRENCE & HAUG LLP

By:

A handwritten signature in black ink, appearing to read "Darren M. Simon", written over a horizontal line.

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